

CLAIMS

1. A digital communication receiver (300; 400) adapted to communicate with a digital communication transmitter across a communication channel, the digital communication receiver comprising:

a channel estimator (330; 430), adapted to provide a channel estimate (H_t) of the communication channel based on a received signal (y_t),

10 an equalizer (340; 440), adapted to estimate a sequence of transmitted symbols (u_t) and provide a sequence of decided symbols (Q_t) based on the received signal and the channel estimate, and

15 a channel tracker (350; 450), adapted to produce an updated channel estimate (H_t) based on the received signal (y_t) and the decided symbols (Q_t), and adapted to supply the updated channel estimate to the equalizer,

characterized by

20 a controller (370; 470), which is operatively coupled to the equalizer (340; 440) and the channel tracker (350; 450), wherein

25 said controller is adapted to receive channel quality indicative data (Metric; H_{start} , H_{end}) associated with an output from the equalizer, to determine whether said channel quality indicative data fail to meet a predetermined criterion, and, if so, to supply an enabling control signal ("Tracker y/n?") to the channel tracker, and wherein

30 said enabling control signal is adapted to switch the channel tracker from a disabled state, in which no updated channel estimate (H_t) is produced, to an enabled state, in which said updated channel estimate (H_t) is produced.

2. A digital communication receiver as in claim 1, wherein said channel quality indicative data (Metric) are 35 produced by the equalizer (340) and represents a degree of

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correspondence between the received signal (y_t) and the decided symbols (\hat{u}_t).

3. A digital communication receiver as in claim 2,
5 wherein said channel quality indicative data (Metric) are
computed by the equalizer (340) as a squared distance be-
tween symbols in the received signal (y_t) and symbols in a
predicted received signal given the decided symbols (\hat{u}_t).

10 4. A digital communication receiver as in any preced-
ing claim, wherein said predetermined criterion is stored
as a threshold value in an electronic memory (390) opera-
tively coupled to the controller (370).

15 5. A digital communication receiver as in claim 1,
further comprising a second channel tracker (480), which is
operatively coupled to the equalizer (440) and the control-
ler (470), wherein

20 said channel quality indicative data (H_{start} , H_{end}) are
produced by the second channel tracker in the form of addi-
tional channel estimates (H_{start} , H_{end}) based on the decided
symbols (\hat{u}_t) from the equalizer, and wherein

25 the controller (470) is adapted to compare the addi-
tional channel estimates with an initial channel estimate
(H_0) and to produce said enabling control signal ("Tracker
y/n?"), if the comparison indicates a difference bigger
than said predetermined criterion.

30 6. A digital communication receiver as in any prece-
ding claim, capable of Time Division Multiple Access commu-
nication.

7. A digital communication receiver (300; 400)
adapted to communicate with a digital communication trans-

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mitter across a communication channel, the digital communication receiver comprising:

a channel estimator (330; 430), adapted to provide a channel estimate (H_0) of the communication channel based on 5 a received signal (y_t),

an equalizer (340; 440), adapted to estimate a sequence of transmitted symbols (u_t) and provide a sequence of decided symbols (\hat{u}_t) based on the received signal and the channel estimate, and

10 a channel tracker (350; 450), adapted to produce an updated channel estimate (H_t) based on the received signal (y_t) and the decided symbols (\hat{u}_t), and adapted to supply the updated channel estimate to the equalizer,

characterized by

15 a controller (370; 470), which is operatively coupled to the channel tracker (350; 450), wherein

said controller is adapted to compare said updated channel estimate (H_t) with an initial channel estimate (H_0) and to supply a disabling control signal ("Tracker y/n?")

20 to the channel tracker, if the comparison indicates a difference smaller than a predetermined criterion, and wherein

said disabling control signal is adapted to switch the channel tracker from an enabled state, in which said updated channel estimate (H_t) is produced, to a disabled state, in which no updated channel estimate (H_t) is produced.

8. A digital communication receiver as in claim 7, the receiver being capable of Time Division Multiple Access (TDMA) communication, wherein said updated channel estimate relates to the beginning and/or the end of a TDMA burst.

9. A wireless communication device, comprising a digital communication receiver as in any preceding claim.

10. A wireless communication device as in claim 9,
wherein the device is a radio telephone.

11. A wireless communication device as in claim 9,
5 wherein the device is a base station in a cellular communication system.

12. A method of operating a digital communication receiver (300, 400), wherein a channel estimate (H_t) of a
10 communication channel between the receiver and a digital communication transmitter is produced from a received signal (y_t), and wherein a sequence of decided symbols (\hat{u}_t) is produced from the received signal and the channel estimate,
characterized by the steps of
15 a) receiving channel quality indicative data (Metric;
 H_{start} , H_{end}), which are directly or indirectly associated
with said sequence of decided symbols (\hat{u}_t);
b) determining whether said channel quality indicative data fail to meet a predetermined criterion; and
20 c) conditionally, if the predetermined criterion is not met, switching from a disabled state, in which no updated channel estimate (H_t) is produced, to an enabled state, in which an updated channel estimate (H_t) is produced from said received signal (y_t) and said sequence
25 of decided symbols (\hat{u}_t).

13. A method as in claim 12, further comprising the step of

30 a') producing said channel quality indicative data (Metric) as a calculated squared distance between symbols in the received signal (y_t) and symbols in a predicted received signal given the decided symbols (\hat{u}_t).

35 14. A method as in claim 12, further comprising the step of

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a'') producing said channel quality indicative data as additional channel estimates (H_{start} , H_{end}) based on the decided symbols (\hat{u}_t), wherein

5 said predetermined criterion is a degree of correspondence between said additional channel estimates and an initial channel estimate.

10 15. A method of operating a digital communication receiver (300, 400), wherein a channel estimate (H_t) of a communication channel between the receiver and a digital communication transmitter is produced from a received signal (y_t), and wherein a sequence of decided symbols (\hat{u}_t) is produced from the received signal and the channel estimate, characterized by the steps of

15 a) receiving an updated channel estimate (H_t) based on the decided symbols (\hat{u}_t);

b) comparing said updated channel estimate (H_t) with an initial channel estimate (H_0); and

20 c) conditionally, if the comparison indicates a difference smaller than a predetermined criterion, switching from an enabled state, in which an updated channel estimate (H_t) is produced from said received signal (y_t) and said sequence of decided symbols (\hat{u}_t), to a disabled state, in which no updated channel estimate (H_t) is produced.

25 16. A method as in claim 15, wherein the receiver is capable of Time Division Multiple Access (TDMA) communication and wherein said updated channel estimate relates to the beginning and/or the end of a TDMA burst.